(19) World Intellectual Property Organization International Bureau



(43) International Publication Date 26 January 2006 (26.01.2006)

(10) International Publication Number WO 2006/009049 A1

(51) International Patent Classification':

B60K 6/04

(21) International Application Number:

PCT/JP2005/012970

(22) International Filing Date: 7 July 2005 (07.07.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

2004-208898 15 July 2004 (15.07.2004) JF

- (71) Applicant (for all designated States except US): TOY-OTA JIDOSHA KABUSHIKI KAISHA [JP/JP]; 1, Toy-ota-cho, Toyota-shi, Aichi, 4718571 (JP).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): KIKUCHI, Yoshiaki [JP/JP]; c/o TOYOTA JIDOSHA KABUSHIKI KAISHA, 1, Toyota-cho, Toyota-shi, Aichi, 4718571 (JP).
- (74) Agent: ITEC INTERNATIONAL PATENT FIRM; Uchisaiwaicho Dai Bldg., 1-3-3, Uchisaiwai-cho, Chiyoda-ku, Tokyo 1000011 (JP).

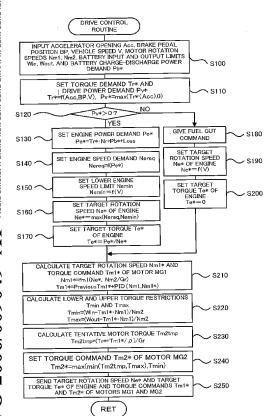
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: HYBRID VEHICLE, CONTROL METHOD OF HYBRID VEHICLE, AND POWER OUTPUT APPRATUS



(57) Abstract: When a drive power demand Pv* is greater than 0, the control procedure of the invention sets the greater between an engine speed demand Nereq and a lower engine speed limit Nemin to a target rotation speed Ne* of an engine (step S160). The engine speed demand Nereq represents a rotation speed of the engine at a specific drive point that ensures efficient output of an engine power demand Pe*. The lower engine speed limit Nemin represents a rotation speed of the engine at another specific drive point for a constant-speed drive of a hybrid vehicle at a current vehicle speed V. When the drive power demand Pv* is equal to 0, the control procedure of the invention cuts fuel supply to the engine and sets the lower engine speed limit Nemin to the target rotation speed Ne* of the engine (step S190). The engine is accordingly driven at the rotation speed of not lower than the lower engine speed limit Nemin and has a quick response to a demand for output power increase from the engine. This arrangement desirably reduces the loading of a battery and prevents premature deterioration of the battery.

WO 2006/009049 A1 |||||